

Healing

THROUGH A SIMPLEXITY LENS

Neelesh Marik

In this essay, we define health as the capacity of systems to regenerate themselves. We understand how individual human beings are different from social aggregates, and how they are quite similar. We examine healing (a means of attaining and retaining health) through the mechanism of information flow and processing; how information plays a role in the dance between order and disorder, and between structure and function of a system. We finally posit that a useful way of looking at healing is the cultivation of the ability to inhabit multiple stations of being (and doing) flexibly and interchangeably, rather than a single station. We loosely use some concepts of complexity to arrive at some simple conclusions.

1. Healing as Information Flow & Processing

Human civilization has moved from the Industrial Age to the Information Age over the last fifty years, a techno-economic transformation which we are slowly beginning to understand and come alive to. The inertial drag of the Assembly Line techno-economic system of the past few hundred years besets not just our social and organizational structures, but also our mindsets in ways which are still difficult to recognize and re-cognize. Modern Physics offers strong evidence that our reality is fundamentally composed of information, quantized as 'bits', a shining example of such an endeavor being Young's Double Slit Experiment with Delayed Choice. The value of information, expectedly, is unearthed only when it is 'processed', which means it is translated into meaning and significance by any information processing system, man and/or machine.

In a social system which comprises many individuals, it is not difficult to appreciate the value of information flow. Communication, which is the exchange of information, constitutes the basis of our day-to-day life of interactions with others, without which social life as we know it would well-nigh cease to exist. The more synchronized and precise our communication systems and technologies become, the greater is our ability to correctly hear and be heard, the better is the basis of relationships in personal spaces and our organic solidarity (Emile Durkheim's term for integration arising from mutual inter-dependence) in catallactic socio-economic organizations. Conversely, it is easy to see that stoppage or distortion of information flow impedes social functionality and progress.

What is not readily evident is the importance of information flow *within ourselves as individuals*, because we usually tend to think of ourselves as a monolithic unit. In reality, we are more 'dividuals' than individuals, meaning we are a constellation of various entities within ourselves which often pull us in different directions, making us feel fragmented and torn. Information flow between and across these entities is critical for our healthy living and functioning.

We can examine this in three steps in increasing order of depth and esotericity:

1. The Modular Mind: The U Penn Professor Robert Kurzban demonstrates that the human mind consists of many specialized units that have evolved through Natural Selection. While these modules sometimes work together seamlessly, they often don't, resulting in impossibly contradictory beliefs, vacillations between emotions, violations of supposed moral principles, etc. The psychologist Douglas Kenrick took this forward by identifying seven specific modules (or sub-selves) which developed out of evolutionary necessity: self-protection, mate attraction, mate retention, affiliation, kin care, status, disease avoidance, each of which occupies a 'cabinet position' in the mental parliament. Marvin Minsky refers to the mind as a vast society of individually simple processes.

   The Modular theory contends that there is no central in-charge module, but that *information flow determines* which steps up at any given moment to take charge based on activation. The Default Mode Network can be seen to be the usual state of the brain-mind in which various modules are competing for attention causing discursiveness and even restlessness (which is often referred to as *rajas* in Yogic parlance).

   Inter-modular information flow can be seen to be a coordinating mechanism by which a *conscious* choice spontaneously emerges on which module takes charge, rather than this choice happening unconsciously and randomly (and often sub-optimally or even regrettably). This information flow sharpens the multi-core processing capabilities of the brain-mind system, just as a powerful computer can conduct various tasks simultaneously and seamlessly. Meditation practice, in its three inter-related variants, (i) mindfulness (*smṛti*), (ii) calm (*śamatha*), and (iii) insight (*vipaśyanā*) allows us to choose which part of our self or sub-self is chosen at any point in time to respond to real-life situations. This constitutes the cultivation of skillful means wherein the action is most appropriate, determined on the diamond

edge of the moment, every moment. We will revisit this in the last section of this essay.

2. The Coherent Heart: The Modular Mind, despite its explanatory power of the 'portfolio' type nature of human ontology, leaves us with a vexatious question: What if the various modules coordinate in a manner that generates unsavory outcomes for the social space in which the individual operates? What if the individualist evolutionary imperative contravenes and disrupts social order and harmony? What if human actions are not compassionate?

   In a landmark research paper called 'The Coherent Heart' published by the HeartMath Institute (2006), the authors offer three perspectives:

   - Emergence Perspective: The physiological, cognitive and emotional systems are intimately inter-related through ongoing reciprocal communication, and their activities can only be understood as emergent through mutual interactivity.
   - Information Processing Perspective: Communication within and among the body's systems occur through the generation and transmission of rhythms and patterns of psycho-physiological activity.
   - Coherence Perspective: The harmonious order in the rhythm or pattern of psycho-physiological activity signifies a coherent system, whose efficient or optimal function is directly related to the ease and fluidity of life processes.

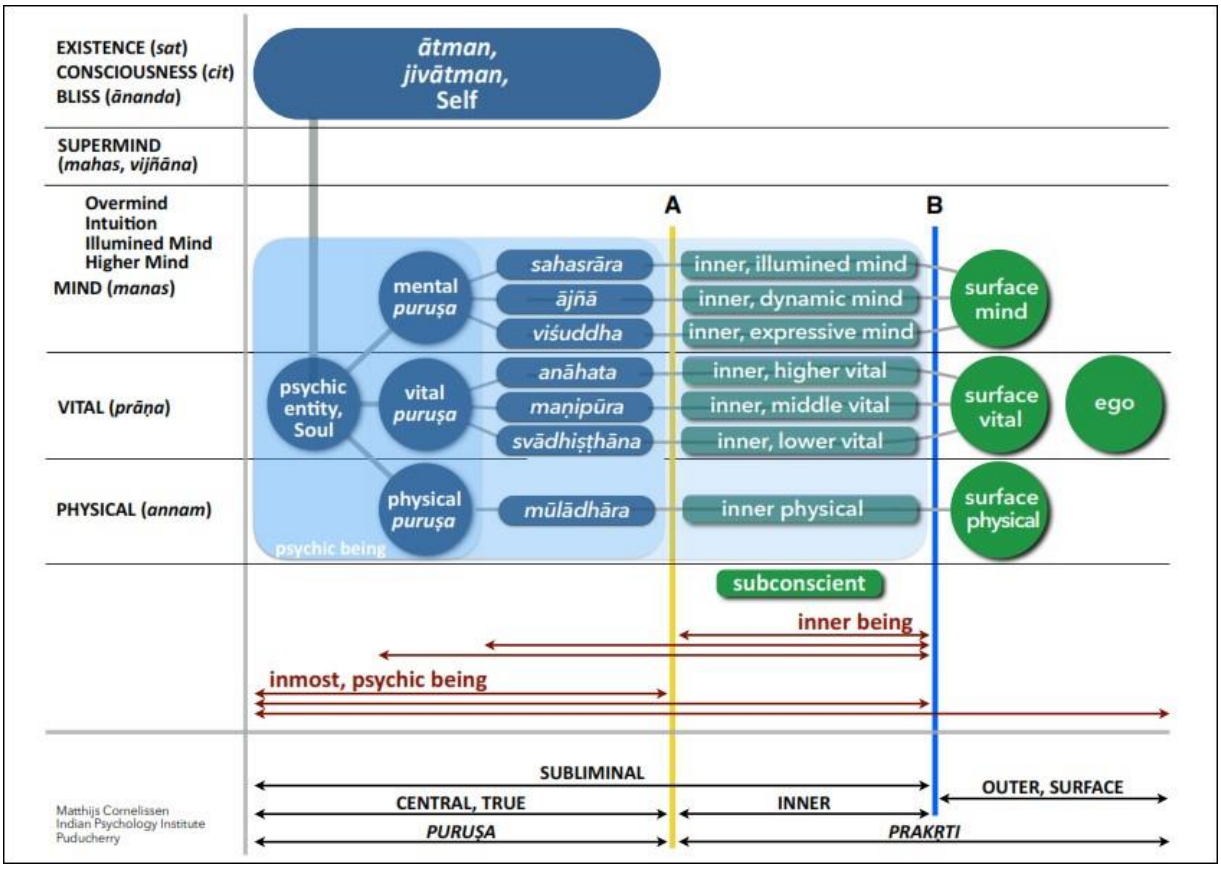
   The heart, as the most powerful generator of rhythmic information patterns in the brain and the body, acts effectively as the global conductor in the symphony to bind and synchronize the entire human system.

   Thinking and feeling are often seen as disparate, dichotomous systems of human instrumentation. This issue is related the left brain- right brain disharmony within individuals, the analysis-synthesis quandary of society, to the masculine-feminine conflict in relationships, etc. In an integrated system powered by information flow, thinking can 'inform' feeling and feeling can 'inform' thinking, thereby raising the phenomenological experience as well as the functionality of operation of the integrated entity.

Embodiment practitioners advise that the best way to deal with undigested emotions is to switch the attention to the physical sensations in the body *concomitant* with the emotional charge and watch them non-judgmentally, preferably induced proactively in a contemplation dojo. Conversely, alternative health experts like Dr. John Sarno advises that many physical pain symptoms can be miraculously healed by simply being aware of (or curious about) repressed and suppressed emotions whose avoidance is facilitated by the physical pain distraction. Both these point to the salutary effect of thinking-feeling integration powered by information flow.

When this flow happens in a synchronous manner, the multi-sensory receptacles of the human system are disentangled from the cobwebs of intra-psychic ignorance, bathed in its clarifying light, and refreshed in its perfume of the present. Thus healed, the coherent heart raises the probability of compassionate action.

3. The Evolutionary Soul: Sri Aurobindo (1872 – 1950) offers a deeper understanding of the human system which posits the evolutionary soul as the innermost guidance system to human choice and action. The evolutionary soul is the ontic substrate within a human being that represents not only a unitive apperception of the world but is the conduit of the deepest aspiration and gift that the incarnated being brings to the manifest realm. The 2-dimensional representation below can be seen the psychic information architecture of the human system in which the soul is the invisible, but eventually accessible fount of agency. (Source: Matthijs Cornelissen, Aurobindian scholar).



Human action can be seen as purposive information flow of the non-verbal kind. Non-action or silence also is a different kind of information flow which derive significance from the *context/timing* in which action or communication is withheld or is absent. Sometimes, the absence of exoteric information flow can be more powerful and effective, yet that absence of exoteric information flow can be seen to be an orchestration of deeper esoteric information flow. The Aurobindian cosmology contends that mental development alone cannot enable access to the soul's voice, and the opening of the heart and its coherence are necessary conditions for it.

Just as information flow in society between individuals is often blocked by misunderstanding and entangled sensitivities of unhealed temperaments, information flow within individuals is often blocked by various coagulations and congealments in the intra-psychic system. Both these adversely affect the health and the ethical-moral comportment of the individual. The 'sorting out' of these blockages is necessary for the healthy functioning of social agents. As the philosopher Will Durant (1917) eloquently notes:

".....The prime moral conflict is not between the individual and his group, but between the partial self of fragmentary impulse and the coordinated self of conscious purpose. There is a group within each man as well as without: a group of partial selves is the reality behind the figment of the unitary self. Every individual is a society, every person is a crowd. And the tragedies of the moral life lie not in the war of each against all, but in the restless interplay of these partial selves behind the stage of action. As a man's intelligence grows this conflict diminishes, for both means and ends, both behavior and purposes, are being continually revised and redirected in accordance with intelligence, and therefore in convergence towards it. Progressively the individual achieves unity, and through unity, personality. Faith in himself has made him whole. The ethical problem, so far as it is the purely individual problem of attaining to coordinated personality, is solved. Moral responsibility, then, whatever social responsibility may be, is the responsibility of the individual to himself. The social is not necessarily the moral— let the sociological fact be what it will. The unthinking conformity of the "normal social life" is, just because it is unthinking, below the level of morality: let us call it sociality, and make morality the prerogative of the really thinking animal.....''

The evolutionary soul, in my opinion, is the *primordial information processing center* of the 'really thinking animal'.

As can be expected, information flow needs regulation and conscious choice. Information overflow can be unhealthy, especially when the inflow is much higher than the processing capacity of the system. With harmonization of various faculties and intelligences within the system, the processing capacity goes up.

2. Healing as Entropy Management

Entropy is a close cousin of both energy and information. Entropy in a physical system is measured by *disorder* or the loss of energy and hence capacity to do useful work; entropy in an information system is a measure of the *unpredictability* of the state of the system. Both disorder and unpredictability are detrimental to the health of a system, as measured by stability and functionality. This is intuitively and empirically true for simple, linear, closed mechanical systems.

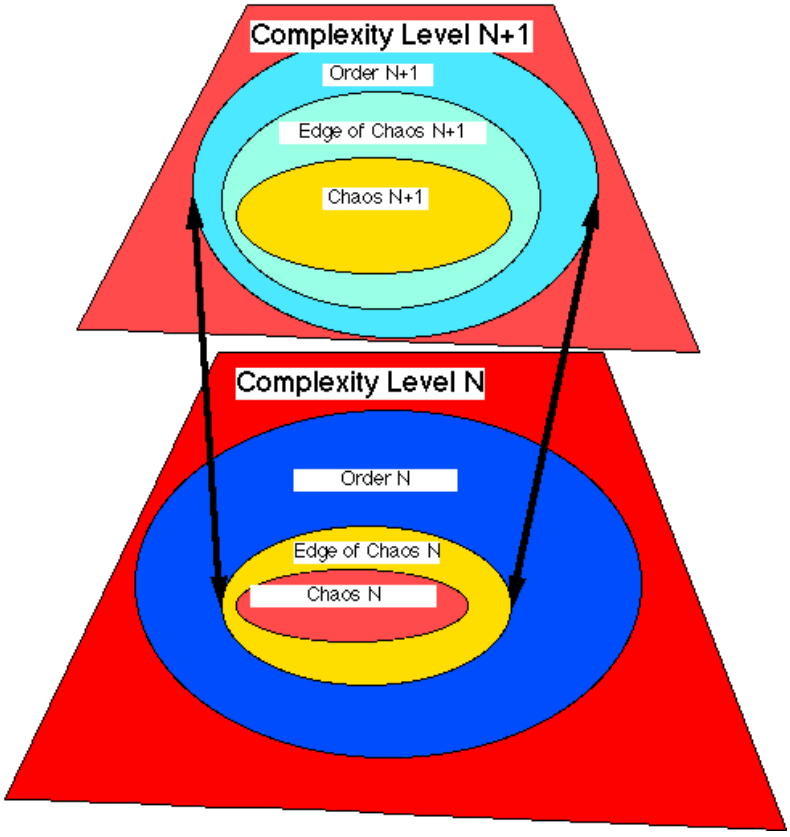
Human systems, however, are neither closed nor mechanical (at least in the biological sense, though psycho-spiritually it is a debatable issue). Human systems are free to exchange energy and information with the environment and therefore have the option to *export* entropy to maintain or regain health as measured by stability and functionality. The more open the system is, the more its ability to handle the entropy-trade with other sub-systems within the super-system (universe). Like in any trading relationship over time, there will be both deficits and surpluses whose spontaneous self-regulation is enabled by information flow (energy flow in physical thermodynamic systems).

From an equilibrium view of life, stability and order are desirable characteristics. However, equilibrium, as we know, can also lead to stasis and even stagnation, especially when superincumbent conditions require a structural change in the system. This applies to both individuals and social systems.

Ilya Prigogine's work on open, non-equilibrium systems demonstrates how structural changes happen in physical systems, which offers a powerful metaphor for psychological reorganization in human beings. Simply put:

- Each person has an upper limit to the amount of input they can handle (their personal threshold), and this limit is based on how much entropy the system can dissipate in a balancing feedback loop. If the system experiences too much input, the system cannot dissipate this entropy and it builds up inside the system in a reinforcing feedback loop.
- As this build-up continues, the system eventually reaches a point where the entropy becomes so great that the system can no longer hold itself together. The system breaks down, ceasing to exist in the old way. At the same moment, however, it can instantaneously reorganize at the higher, more complex level. This transformation is a true death and a rebirth, a quantum leap to a whole new way of being. However, this is only probabilistic, and not guaranteed or assured. My hypothesis is that synchronous information flow and processing raises this probability.
- The main characteristic of this new system is that it can easily handle the input, complexity, and intensity that the old system could not handle, due to greater resiliency and plasticity. Information processing power raises the personal

threshold, which in turn raises the information processing power. The evolutionary trajectory is then on a roll.



These successive leaps in information metabolism can be seen as *punctuated equilibrium* states, wherein evolutionary development is marked by isolated episodes of rapid speciation or disruption (due to reinforcing feedback loops) between periods of little or no change (due to balancing feedback loops). In spiritual philosophy, these disruptions are often called 'fire-walks' or 'dark nights of the soul'.

Just as entropy export and entropy-led reorganization are important for personal health and growth, we can see parallel phenomena in social systems. Social entropy is a measure of dissatisfaction of human beings in a society, distinguished by modes of negative behaviors, specifically alienation, anomie, and deviance, that function to instill a disordering effect in a given social structure resulting in its inability to do work or fulfill function. Although the locus of experience continues to be individuals (since from a phenomenological standpoint 'society' is an abstraction), collective inter-personal and inter-institutional dynamics introduce different forces of decay and regeneration.

Social order can be measured in terms of the efficiency (output to input ratio) and effectiveness (desirable outcomes) of the functionality of society in doing what it is supposed to do – take care of its citizens, sustainably. Social health is thus a derivative of individual health, yet a new set of rules apply in the relational space between individuals for maintaining social order in functional clusters of social institutions such as government, religion, family etc.

Social systems can also be dissipative because they are open systems that can import energy and resources, and export entropy. Entropy export can be manipulative or salubrious, depending on the method of information flow within the social system. Propaganda is usually manipulative information flow engineered to keep an outward appearance of order by mitigating dissent. Transparent information flow with key metrics of institutional performance, on the other hand, is healthy for both the experience of individuals and long-term functional effectiveness of the social system. The internet is the crucible within which this can now happen.

When the level of entropy reaches thresholds, we can see disruptions that threaten the existing socio-political structures. Occupy Wall Street, the Arab Spring (and various revolutions in the pre-internet history) are examples wherein the old structure is threatened and a new order can probabilistically take shape, often referred to as a *regime shift*. The American War of Independence remains perhaps one of the better examples of a political regime shift. The internet age raises the probability of success because of better information flow and versatile processing through very many distributed but connected organs of perception, even though various other factors need to be addressed concomitantly. This is a subject of another paper.

3. Healing as a Dance between Structure and Function

Why do free agents subscribe to a social structure which often imposes limits and restrictions on their freedom? Structure becomes necessary to reduce transaction costs of coordinated action, both for those who govern the structure and those who are governed. In business, Ronald Coase's Theory of the Firm shows how a company optimizes costs of human resources better than a freelance market system. In politics, Social Contract theory demonstrates the human proclivity to give up some rights for the ostensible protection of *more valuable* rights.

Much of the energy consumed by a social organization is spent to maintain its structure, counteracting social entropy. Force, propaganda, systemic manipulation are examples of misuse of energy and social resources to preserve structure (and hence power) by a privileged few over the disadvantaged and ignorant many. Tapping into the intelligence and creative power of citizens through for solving social problems can be seen as a good use of energy and resources. However, the latter is not necessarily appealing to benefactors from the status quo, nor is it easy to execute at scale.

In the previous section, we have seen how a dance between structure and function promotes long-term health – a structure is preserved stably and predictably till it serves the functions it ought to, and then entropy build-up forces a new structure through *self-organized criticality*, thereby enhancing functional capability enormously.

Closely linked to the healthy functioning of society are *informal institutions and practices*. Formal institutions like schools, companies, government bureaucracies are designed and managed under a strict set of rules and fulfill explicit functions, typically through top-down power hierarchies. Informal institutions, in contrast, are created organically and managed through flexible protocols, nimble agreements and play implicit roles in social functioning. They offer a valuable complement to formal institutions in both streamlining and diversifying information flow and entropy regulation. This complementary relationship enables a structure – function dance.

Schools and universities serve the explicit function of imparting education to students (supposedly!), watercooler and coffee houses serve the implicit function of socialization. Marriage is a formal institution constituting a basis for a nuclear family and familial legacy transfer, while informal relationships/affairs allow a relaxed letting-the-hair-down information exchange without the draconian restrictions that formal structures tend to reify. Formal prescription drugs are for clinical healthcare, while recreational drugs are used for stretching the mind in ways otherwise not formally approved. Boardroom and shareholder meetings go through the motions of corporate protocols of business management, while the real deals and arrangements are usually struck at bars and golf courses. Such examples are implicitly known to everyone, yet seldom explicitly alluded to or acknowledged.

It is not difficult to see that in each of the above cases, the rigidity of structure often becomes a hindrance to smooth functioning, which drawback is handled by information flow through the informal practices so that functional effectiveness of the social system is maintained. However, the current formal-informal system interfaces in society are not

necessarily optimized for local, and where appropriate, global efficiency and health. Which is why we have inadequate character formation in education, broken relationships both within and without wedlock, eroding trust in the Big Pharma-Food complex with pervasive drug prohibition-related crime, and general employee dissatisfaction and cronyism in business corporations.

How can we improve the entropy regulation and information flow in a way that raises the functionality of formal and informal social institutions? To begin to answer that question we need to look at the dilemma of socio-political aggregates. When an aggregate size surpasses the Dunbar number of ~ 150, it is no longer possible to manage social order through personal familiarity; a grand narrative or story is needed for social cohesion. The organization of individuals into collectives on some suitable basis has been a vexatious challenge throughout history. Various experimental basis have been tried - geography, language, religion, jurisdictional expediency, economic homogeneity - all of which have eventually failed. All over the world, we can see that the centrifugal forces of differentiation and autonomy tend to undermine the centripetal forces of political maneuver and centralization that masquerade as ideological platitudes, the latest of which are 'nationalism' and 'globalization'. That is because the externalist imposition of a facile and superficial unity has very little intrinsic power of cohesion and coherence among an increasingly heterogeneous and differentiated citizenry of the information age.

In the age of digital (rather than political) globalization, this unity can spontaneously emerge on the basis of psychological attunement and motivational vectors of creative resonance that transcend the restrictions of national boundaries. This is a supple and flexible unity that honors diversity and allows for a dynamic reorganization of individuals in multiple we-spaces with porous boundaries. The information economy allows that new configuration of aggregates where the community is an organic emergent rather than an imposed fait accompli. It is the society-economy on a service-oriented architecture. The Coase equation of transaction costs and the premises of Social Contract Theory both merit a revision.

When various social functions are managed through an information-enriched, psychologically cohesive aggregates of intelligent agents who create value that is aligned with the values of social order, which in turn are determined and defined by everyone in general but no one in particular, social structure becomes *a means* for better functioning, *not an end* in and of itself. Structural change through reorganization, based

on crowd-sourced intelligence and universal and voluntary participation, becomes a business-as-usual phenomenon rather than a random exception. When individuals' personal and work lives blend in flexible formal-informal interfaces due to the alignment of purpose and passion, individual health and social health become co-synchronous, much like a Möbius strip.

4. Healing as Seamless Poly-furcation

Let us now explore how systems tend to gravitate towards a certain specific set of states, amongst a universe of all possible states. This specific state can be called an *attractor*, which when represented in any geometrical state-space can be a point, a set of points, a curve etc. Loosely speaking, an attractor can be seen to represent a destination path of least resistance for the system, unless dramatically perturbed. For example, an individual may tend to gravitate to a state of depression and helplessness in a certain atmosphere, or a society may devolve to a state of anarchy and dystopia under certain political conditions. This is a statistical eventuality only, and it depends both on the system and its environment. This configuration of energy exchange and entropy trade can be referred to a *basin of attraction*, or a stable equilibrium condition.

The non-linear dynamics of critical conditions can force a system to a *bifurcation point*. Bifurcation is a process by which a system can split off in a new, qualitatively different direction with long-term changes in behavior, thereby resulting in *two* basins of attraction for the system. The system is then said to be *bi-stable*, and it *breaks symmetry* because the uniformity of choice of system states is now uncertain as a result of differentiation. Symmetry breaking is a phenomenon in which critical points decide a system's fate by determining which branch of a bifurcation is taken; this is highly sensitive to initial conditions.

The Agricultural and Industrial Revolutions, the Enlightenment, the onset of the Market Economy etc. represent symmetry breaking from bifurcation points in our socio-cultural evolution. Arguably, these bifurcations have bettered the human condition in some ways at least, and hence can be seen as healing processes of some sort, even if temporarily. With every such successive bifurcation, society can be seen to being enriched in *poly-furcation*, in that it offers human beings multiple modes of social organization simultaneously.

With the onset of the Information age, poly-furcated aggregates are now connected, inter-dependent and mutually adaptive like never before. This can be seen as *Double Symmetry break*, or a symmetry break of a symmetry break. This is a new phenomenon and one whose possibilities we have barely begun to intuit. This sociological poly-furcation offers options of psychological poly-furcation too, as the digitally integrated world citizenry begin to inhabit, operate, and learn to thrive in various state-spaces of being and doing with each other.

To use the metaphor of the Five Elements as it applies to human characteristics, we can see

- *Earth* as stability, rootedness, sureness
- *Water* as adaptability, suppleness, coolness
- *Fire* as drive, passion, (creative) destruction
- *Wind* as force, circulation, dynamism
- *Space* as abundance, openness, freedom

We can also see how life circumstances necessitate our inhabitation of all these states/ characteristics and our surefootedness and seamlessness in shifting states, sometimes rapidly. Yet, we find most of us stuck in one or two states most of the time, because of the chains of inertial patterning and comfort zone biases. When we are forced by circumstances (sometimes violent) to shift state, we become susceptible to mistakes because *we have not been adequately poly-furcated*.

For an individual, this ability to generate and dwell in multiple basins of attraction, each of which constitute optimal comportments to real-life situations, become a crucial factor for healthy functioning, especially in uncertain and turbulent conditions. In the information empowered, entropy-managed, ecosystem held by a worldwide web which straddles both digital and analog reality, poly-furcation can be a new way of healthy living.

Let us join hands in crafting this new architecture for our civilization.
